

Abstract Submitted
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Deformability-based capsule sorting ANNE LE GOFF, NADEGE MUNIER, PAULINE MAIRE, BMBI, Universite de Technologie de Compiegne, FLORENCE EDWARDS-LEVY, ICMR, Universite de Reims, ANNE-VIRGINIE SALSAC, BMBI, Universite de Technologie de Compiegne — Many microfluidic devices have been developed for cancer diagnosis applications, most of which relying on costly antibodies. Since some cancer cells display abnormal mechanical properties, new sorting tools based on mechanical sensing are of particular interest. We present a simple, passive pinched flow microfluidic system for capsule sorting. The device consists of a straight microchannel containing a cylindrical obstacle. Thanks to a flow-focusing module placed at the channel entrance, capsules arrive well-centered in the vicinity of the obstacle. Pure size-sorting can be achieved at low shear rate. When increasing the shear rate, capsules are deformed in the narrow space between the pillar and the wall. The softer the capsule, the more tightly it wraps around the obstacle. After the obstacle, streamlines diverge, allowing for the separation between soft capsules, that follow central streamlines, and stiff capsules, that drift away from the obstacle with a wider angle. This proves that we have developed a flexible multipurpose sorting microsystem based on a simple design.

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